

3A, 200V-1000V High Efficient Surface Mount Rectifier

FEATURES

- Glass passivated junction chip
- Ideal for automated placement
- Low reverse leakage
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

- Switch Mode Power Supply
- Inverters and Converters
- Free Wheeling diodes

MECHANICAL DATA

- Case: DO-214AB (SMC)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.25 g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	3	A
V_{RRM}	200-1000	V
I_{FSM}	88	A
$T_{J\ MAX}$	150	°C
Package	DO-214AB (SMC)	



DO-214AB (SMC)



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	SYMBOL	HS3D-K	HS3G-K	HS3J-K	HS3K-K	HS3M-K	UNIT
Marking code on the device		HS3D	HS3G	HS3J	HS3K	HS3M	
Repetitive peak reverse voltage	V_{RRM}	200	400	600	800	1000	V
Reverse voltage, total rms value	$V_{R(RMS)}$	140	280	420	560	700	V
DC blocking voltage	V_{DC}	200	400	600	800	1000	V
Forward current	I_F	3					A
Surge peak forward current single half sine-wave superimposed on rated load	I_{FSM}	88					A
		244					A
Junction temperature	T_J	-55 to +150					°C
Storage temperature	T_{STG}	-55 to +150					°C

THERMAL PERFORMANCE			
PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance	$R_{\theta JL}$	25	$^{\circ}C/W$
Junction-to-ambient thermal resistance	$R_{\theta JA}$	54	$^{\circ}C/W$
Junction-to-case thermal resistance	$R_{\theta JC}$	18	$^{\circ}C/W$

Thermal Performance Note: Units mounted on PCB (16mm x 16mm Cu pad test board)

ELECTRICAL SPECIFICATIONS ($T_A = 25^{\circ}C$ unless otherwise noted)							
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT	
Forward voltage ⁽¹⁾	HS3D-K	$I_F = 1.5A, T_J = 25^{\circ}C$	V_F	0.81	-	V	
		$I_F = 3A, T_J = 25^{\circ}C$		0.88	1.0	V	
		$I_F = 1.5A, T_J = 125^{\circ}C$		0.66	-	V	
		$I_F = 3A, T_J = 125^{\circ}C$		0.74	0.86	V	
	HS3G-K	$I_F = 1.5A, T_J = 25^{\circ}C$		0.93	-	V	
		$I_F = 3A, T_J = 25^{\circ}C$		1.06	1.3	V	
		$I_F = 1.5A, T_J = 125^{\circ}C$		0.75	-	V	
		$I_F = 3A, T_J = 125^{\circ}C$		0.87	1.08	V	
	HS3J-K to HS3M-K	$I_F = 1.5A, T_J = 25^{\circ}C$		1.33	-	V	
		$I_F = 3A, T_J = 25^{\circ}C$		1.52	1.7	V	
		$I_F = 1.5A, T_J = 125^{\circ}C$		0.98	-	V	
		$I_F = 3A, T_J = 125^{\circ}C$		1.16	1.48	V	
Reverse current @ rated V_R ⁽²⁾		$T_J = 25^{\circ}C$	I_R	-	10	μA	
		$T_J = 125^{\circ}C$		-	200	μA	
Reverse recovery time		HS3D-K to HS3G-K	$I_F=0.5A, I_R=1.0A, I_{rr}=0.25A$	t_{rr}	-	50	ns
		HS3J-K to HS3M-K			-	75	ns
Junction capacitance		HS3D-K	1 MHz, $V_R=4.0V$	C_J	53	-	pF
		HS3G-K			37	-	pF
		HS3J-K to HS3M-K			25	-	pF

Notes:

- (1) Pulse test with $PW=0.3$ ms
- (2) Pulse test with $PW=30$ ms

ORDERING INFORMATION		
ORDERING CODE	PACKAGE	PACKING
HS3X-K R7G ⁽¹⁾	SMC	850 / 7" Plastic reel
HS3X-K M6G ⁽¹⁾	SMC	3,000 / 13" Plastic reel
HS3X-K R6G ⁽¹⁾	SMC	3,000 / 13" Paper reel

Notes:

- (1) "X" defines voltage from 200V(HS3D-K) to 1000V(HS3M-K)

CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.1 Forward Current Derating Curve

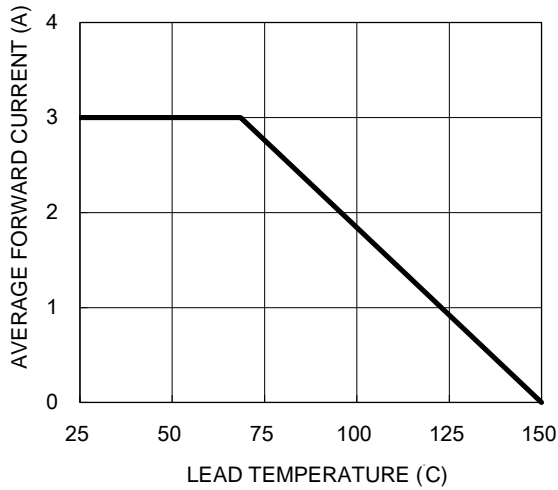


Fig.2 Typical Junction Capacitance

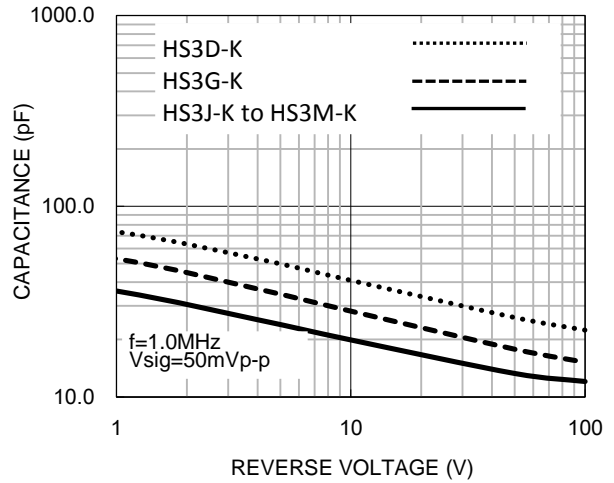


Fig.3 Typical Reverse Characteristics

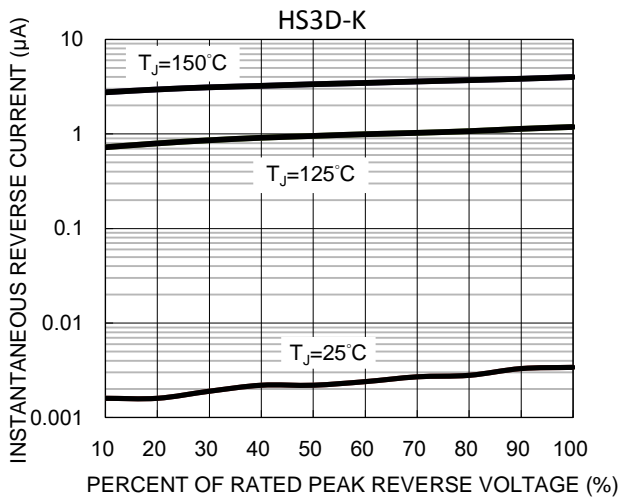


Fig.4 Typical Forward Characteristics

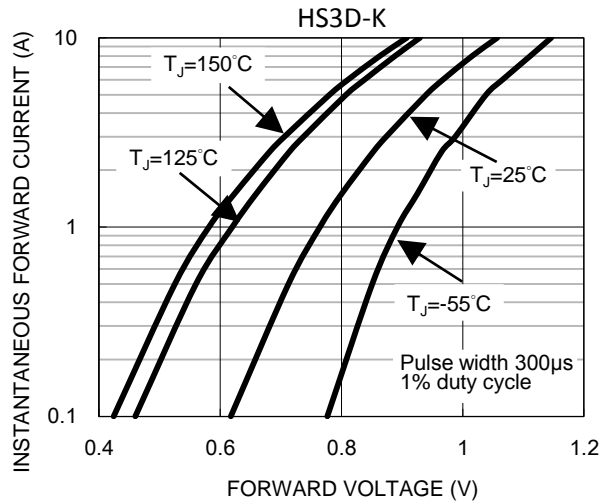


Fig.5 Typical Reverse Characteristics

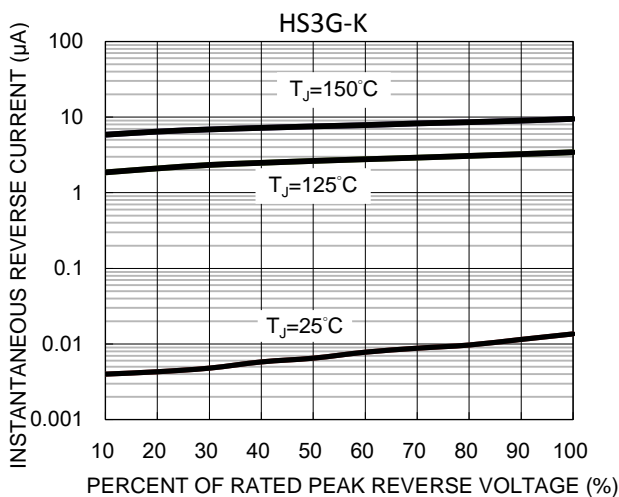


Fig.6 Typical Forward Characteristics

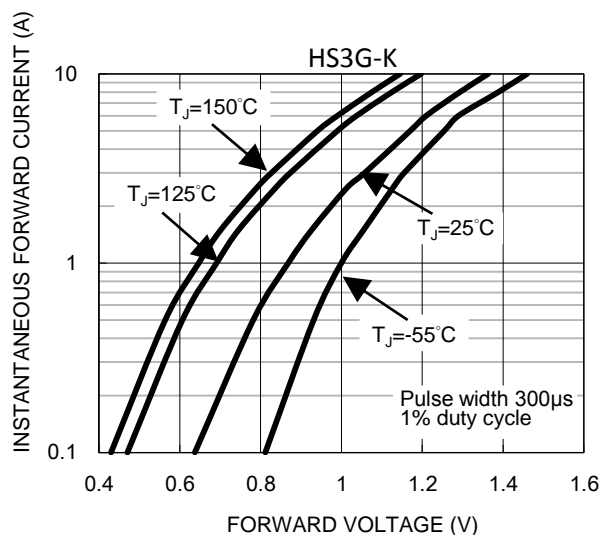


Fig.7 Typical Reverse Characteristics

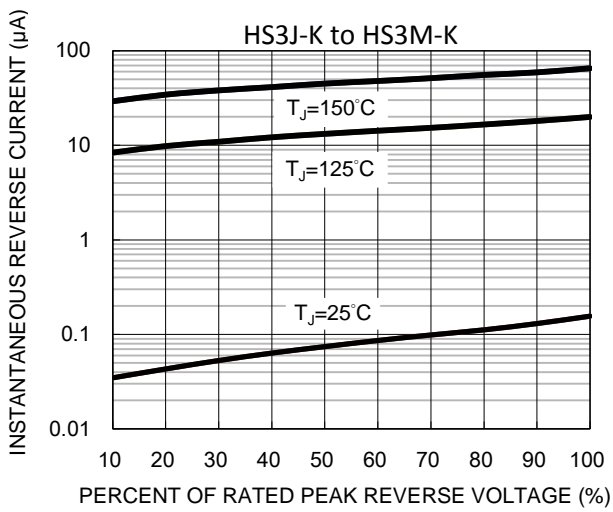


Fig.8 Typical Forward Characteristics

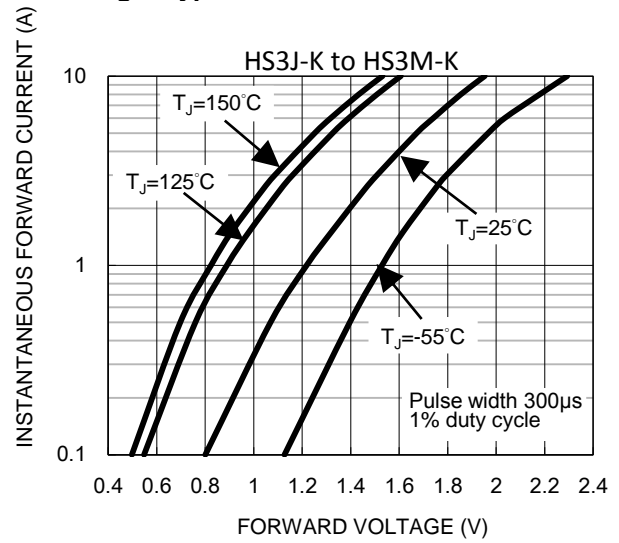
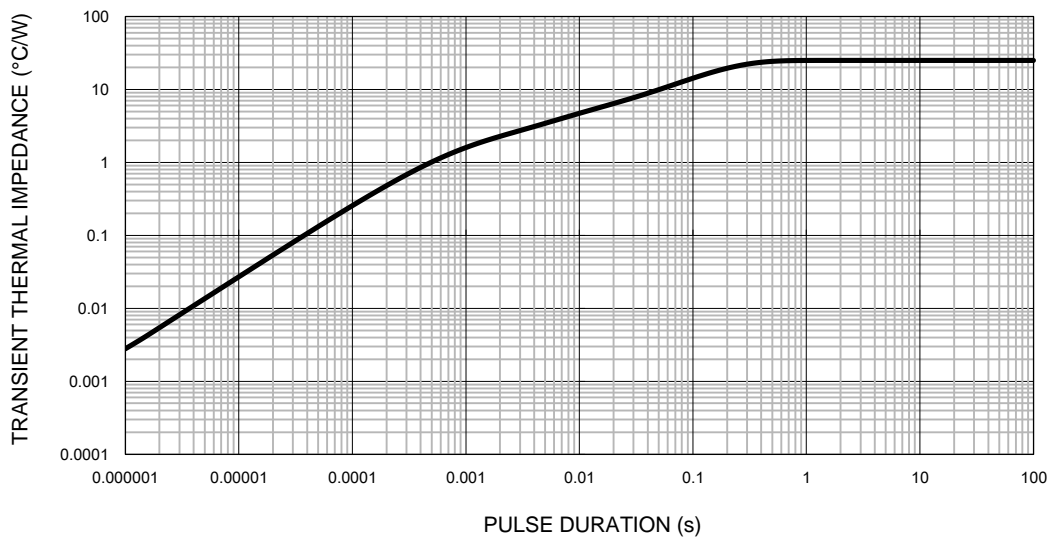
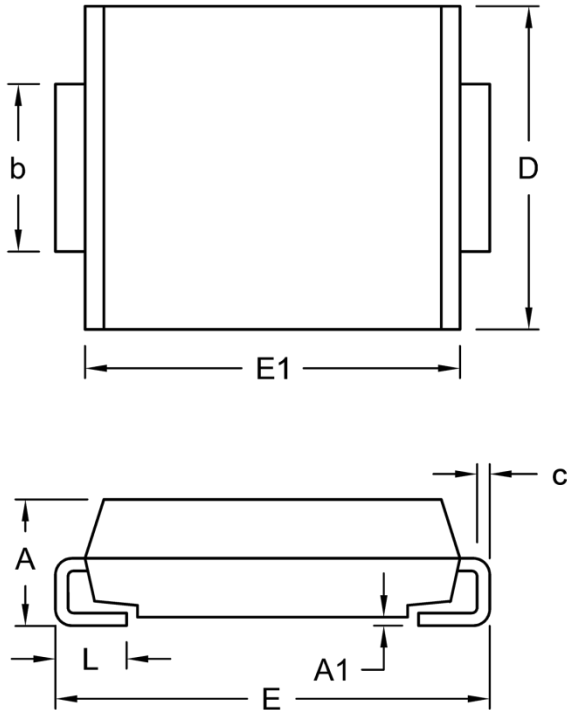


Fig.9 Typical Transient Thermal Impedance



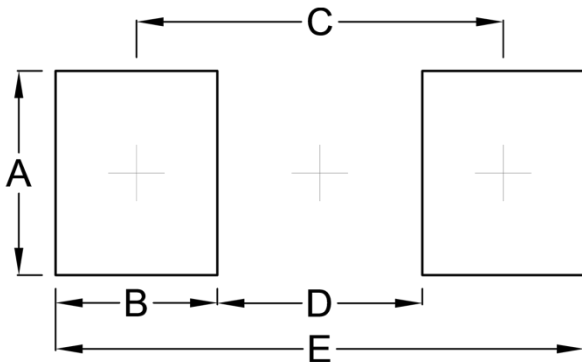
PACKAGE OUTLINE DIMENSIONS (Unit: Millimeters)

DO-214AB (SMC)



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.99	2.61	0.078	0.103
A1	0.10	0.20	0.004	0.008
b	2.85	3.27	0.112	0.129
c	0.15	0.31	0.006	0.012
D	5.59	6.22	0.220	0.245
E	7.75	8.13	0.305	0.320
E1	6.60	7.11	0.260	0.280
L	0.76	1.52	0.030	0.060

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	3.82	0.150
B	3.03	0.119
C	6.87	0.270
D	3.84	0.151
E	9.90	0.390

MARKING DIAGRAM



- P/N = Marking Code
- G = Green Compound
- YW = Date Code
- F = Factory Code

Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Purchasers are solely responsible for the choice, selection, and use of TSC products and TSC assumes no liability for application assistance or the design of Purchasers' products.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale